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## ORIGINAL ARTICLES

### BRONCHIECTASIS\*

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Bronchiectasis is the dilatation of a bronchus or bronchi. These dilatations may give rise to few or no symptoms or may become infected and result in persistent cough, profuse expectoration and other symptoms and signs more commonly associated with this disease.

This paper is based upon observations made of forty cases of bronchiectasis over a period of from one to twelve years, the diagnosis of which has been proved in every case by injection of the bronchial tree with lipiodol.

#### *Etiology and Pathology*

Etiologically, bronchiectasis may be congenital or acquired. The congenital forms consist of the atelectatic type and developmental deformities such as congenital cystic disease. Undoubtedly many cases persist for years without symptoms and it is therefore impossible to be certain of the relative proportion in each group and, in the acquired type, to determine at what time the actual development of bronchiectasis occurs.

Our interest and that of most clinicians lies chiefly in the so-called acquired group when definite symptoms of disease are present at the time the patient is first observed.

Although many theories are advanced to explain the development of bronchiectatic dilatation, most are agreed that the two main responsible factors are infection and pressure. Infection may involve only the epithelium or the sub-epithelial lining or invade the entire bronchial wall, with destruction of its muscular and elastic coats and replacement by fibrous tissue. Interstitial fibrosis of the parenchyma may also occur and extend to the periphery of the lung and involve its pleural surface. So that in the more advanced forms the involved bronchi consist of infected tubes or sacs filled with accumulated secretions and pus, with a varying amount of

peribronchial infiltration and fibrosis. The source of infection is usually attributed to the upper respiratory diseases such as infections of nose, throat and sinuses and to the lower respiratory diseases such as measles, whooping cough and pneumonia. To what disease the bronchiectasis can be attributed in each case we find it difficult to state with any marked degree of accuracy because the relationship between the respiratory diseases and the onset of symptoms of bronchiectasis are very indefinite in most cases.

TABLE I

*Incidence of Respiratory Diseases in 40 Cases*

Diseases	No. of Cases	Per cent. of Total
Measles .....	27	67.5
Whooping Cough .....	20	50.0
Measles and Whooping Cough .....	17	42.5
Pneumonia .....	17	42.5
Acute Bronchitis .....	23	57.5
Influenza .....	12	30.0
Frequent Colds .....	25	62.2

The weakness of the bronchial wall being present, whether congenitally acquired or from metaplastic changes following infection or from other causes, we may briefly mention the phenomena of pressure. A positive pressure is always present within the bronchus as contrasted with a negative pressure in the peribronchial lung structure which the normal bronchus with its muscular and elastic coats is able to withstand. Many factors serve to increase this pressure such as deep breathing, inspiratory spasms preceding cough, which if kept up for a long period tend to cause dilatation of the weakened or inelastic bronchial wall. Obstruction of the bronchus from any cause such as by mucous plugs, fibrotic constrictions, foreign bodies, pressure from without by tumors, atelectasis, inflammatory conditions, or other factors which serve to obstruct the free egress of air, will raise the pressure within the bronchus and naturally will predispose to ectasia. These changes are more apt to occur during childhood because of the more primitive type of bronchial tree and its tendency to become more easily filled with secretion, which in itself may be responsible for increased intrabronchial pressure.

\*Read before the Providence Medical Association, March 2d, 1936.

### Types

Many types of bronchiectasis are described such as fusiform, beaded, globular, sacculated, tubular, clubbed, cylindrical, varicose, atelectatic and others. We believe that elaborate classification based upon morphology serve to confuse and are of no practical value. We have been able to divide our series into sacculated and tubular types and mixed, the latter being a combination of sacculated and tubular types occurring in the same chest. There are eight of the mixed variety and sixteen of each in the other two types.

TABLE II  
Distribution according to Type

Types	Unilateral		Bilateral	Total
	R. Lung	L. Lung		
Sacculated .....	3	7	6	16
Tubular .....	3	7	6	16
Mixed .....	0	2	6	8
Total .....	6	16	18	40
Total involvement—right lung .....				24
Total involvement—left lung .....				34

These cases are also classified as wet or dry depending on whether or not expectoration is present. In this series there are 33 wet and 7 dry.

### Symptoms and Physical Signs

Bronchiectasis usually suggests to our mind a patient with a chronic cough, moderate to profuse expectoration, clubbing of the fingers, with moist rales at the base of one or both lungs. As a matter of fact there are no distinctive symptoms or physical signs in a large percentage of cases. Variation of symptoms and signs is to be expected because of the variation in the type and extent of the lesions, which may vary all the way from one or two small dilatations to those with massive involvement of both lungs, exhibiting a picture of chronic suppurative pulmonary disease. Consequently, the patient's only complaint may be a slight cough or an occasional hemoptysis and no physical signs may be elicited. On the other hand there may be constant cough, profuse expectoration, dyspnea, clubbing of fingers and physical signs suggesting extensive pulmonary excavation.

In the wet variety dullness is to be expected over the affected area and moist rales are usually present but we must not be misled by their absence which may occur when the dilatations are filled with secretions.

The dry type of bronchiectasis where no demonstrable infection is present usually presents the least

in the way of physical signs and symptoms. The disease may manifest itself with only an occasional cough or streaked sputum, or may be ushered in with frank hemoptysis. Of the 40 cases observed, 16 or 40 per cent. had hemoptysis, the amount varying from streaking to profuse hemorrhage; of this number 4 occurred out of the dry group of which there were 7, and 12 in the wet of which there were 33. Graham, Singer and Ballou<sup>1</sup> state that hemoptysis occurs more frequently in bronchiectasis than it does in pulmonary tuberculosis.

### Diagnosis

The incidence according to sex revealed 24 males (60%) and 16 females. This is about an average sex distribution as compared with other series of cases such as that of Fletcher<sup>2</sup> who found 55 per cent. males and 45 per cent. females. The distribution according to age groups showed the highest number to fall in the 10 to 19 and the 20 to 29 year age groups, the number in each group being 12, and the 24 in these two groups accounting for 60 per cent. of the cases studied. This corresponds fairly closely with the series of 182 cases at the Barnes Hospital<sup>3</sup> in which the greatest incidence fell about equally in these two decades. It should be stated that the ages quoted refer to the age when the diagnosis was definitely proved and that there is no doubt that the disease had existed several years in many instances.

TABLE III  
Distribution according to Age Groups

Age Groups	Sex		Total	Per cent. Distribution
	Male	Female		
0 to 9 .....	1	0	1	02.5
10 to 19 .....	8	4	12	30.0
20 to 29 .....	5	7	12	30.0
30 to 39 .....	1	3	4	10.0
40 to 49 .....	5	1	6	15.0
50 to 59 .....	4	1	5	12.5
Total .....	24	16	40	100.0

In some cases the diagnosis of bronchiectasis can be suspected from the history, symptoms and physical signs, but it is impossible to be sure of this diagnosis without resorting to lipiodol injection of the bronchial tree.

Routine x-rays of the chest have given us very little information. Many cases with honeycomb shadows and densities at the base of the lung which were believed to be bronchiectatic dilatations frequently showed a normal filling with lipiodol. We have attributed many of these densities to peribronchial vascular changes rather than to abnormality of the bronchus itself, such as may occur

with a subacute or chronic bronchitis. On the other hand patients whose x-ray plates showed apparently little pathology proved to be bronchiectatics after the injection with lipiodol; in fact it is impossible to prove or rule out any case with suggestive symptoms unless the bronchography of the lungs has been fully investigated.

Any case with cough, expectoration or hemoptysis, in which the diagnosis has not been definitely established, may be bronchiectasis unless it has been proved that the bronchial tree is normal. It may be confused with chronic bronchitis, tuberculosis, bronchial stenosis, benign or malignant tumors of the bronchus, lung abscess, foreign bodies or other less common diseases.

It is not to be expected that lipiodol injections will clear up the diagnosis in all doubtful cases, but matters may be greatly facilitated by proving a normal bronchial tree, establishing the diagnosis of bronchiectasis, or the presence of an obstructed bronchus.

Of the 40 cases studied, 7 had had previous residence in tuberculosis sanatoria but were discharged because of persistently negative sputum, with no evidence of clinical tuberculosis. Two cases included in this series exhibiting lower lobe dilations were found to be cases of basal tuberculosis. When first seen the routine x-ray was not characteristic, no positive sputum had been obtained and the diagnosis was unsuspected by us. This has put us on our guard against overlooking this latter diagnosis which at times I believe we are prone to forget.

Repeated sputum examinations for tubercle bacilli were done in every case with expectoration. It was attempted to have cultural studies done for determination of other organisms with special reference to their aerobic and anaerobic characteristics, but there were no available facilities for this purpose. Smears showed the usual mixed type of infection which characterizes the disease but fusiform and spirochaetes have been found only in rare instances. From personal observation and examination of the literature relative to sputum studies we have not felt that our own outlook would be greatly influenced from a therapeutic standpoint.

The technique of lipiodol injection has been done by the supraglottic method with the exception of four cases, two of which were done by the catheter method and two by direct injection through the cricothyroid membrane. We believe that the supraglottic method is the one of choice except in iso-

lated instances. In over two hundred injections done in this manner, in which all of the patients have been ambulatory, we have had no untoward results of any kind except slight iodism in two cases.

#### *Treatment*

Bronchiectasis falls into that group of diseases where curative treatment on the whole has been unsatisfactory. Consequently, many forms of therapy have been suggested and carried out, although a study of the literature reveals contradictory results in many instances. Until the advent of lobectomy very little progress had been made in the actual curing of the disease and the hazards of this operation in the past have been so great that we have not felt justified in recommending it to patients, a large number of whom are comparatively well. We are glad to say that the technique of this operation has so improved that we now feel more free to advise it in those cases where the indication exists.

The methods of treatment used in this study were as follows

#### 1. POSTURAL DRAINAGE AND OTHER GENERAL MEASURES

In this first group treatment was directed to clearing up foci of infection with special reference to the nose, throat and sinuses, fresh air, adequate nourishment, general hygienic treatment and postural drainage. Diseased tonsils were removed and sinuses, suspected of infection, were x-rayed (25%) and referred for treatment.

The intermittent type of postural drainage has been used and was carried out three to five minutes several times a day, depending upon the amount of expectoration present.

Associated with the above measures we have used drugs to a rather limited degree, such as creosote to diminish the foetid odor of expectoration and other drugs for symptomatic relief.

Several of these cases have been under observation for a long time—for instance, one case, 12 years; two cases, 10 years; one case, 9 years; one case, 8 years; two cases, 7 years. They have had special care at Lakeside Preventorium so that postural drainage and general hygienic measures have been pretty well carried out. Needless to say, these cases have benefited—this has been noted in weight gain, some decrease in the amount of expectoration and cough. Since no lipiodol injections were done on these cases up until three years ago, it cannot be definitely stated whether the bronchiectatic dilata-

tions have diminished or increased in size. It is our impression from questioning these patients and from repeated examinations over a period of years that very little permanent improvement has occurred, although we believe that there is very little doubt but that they would have been decidedly worse had they remained untreated. When these patients returned to their homes it is possible that postural drainage in some cases was not faithfully carried out, and this is absolutely essential if it is to be effective.

## 2. LIPIODOL THERAPY

A group of 7 cases in which the above more general measures failed to give any marked benefit were treated with repeated lipiodol injections. All the cases treated had bilateral disease. We were unable to determine in advance from a study of the morphological appearance of the lesion which cases would be benefited. Five cases obtained definite relief of symptoms noted by lessened expectoration, some weight gain, and the patients stated that they felt better in general. These injections were given at monthly intervals which were lengthened as improvement continued, 10 cc. of lipiodol being injected into each lung. It has been a frequent experience to have patients return requesting lipiodol injections following the preliminary injection for diagnosis. Relief from this method of treatment has in every case been of a temporary nature, the period of benefit varying in different cases but on an average of from one to two months. Oschner,<sup>4</sup> in his series, reports 32 per cent. with complete relief from symptoms and 4 cases in which the dilatations disappeared. We have been unable to demonstrate any change in the appearance of the lesion and in no case can we say that the symptoms have entirely disappeared. Much experimental work has been done to prove and disprove the value of lipiodol as a therapeutic measure, but we are not interested in this phase of the subject at this time. Suffice it to say, in our opinion it should be looked upon as an accepted method of treatment and in our experience has been most helpful in adults in whom the disease, usually bilateral, has been present for a considerable period of time, where the bronchial walls are believed to be more or less rigid so that collapse methods are of little value, and to whom we can offer very little else in the way of active therapy.

## 3. OPERATIONS ON THE PHRENIC NERVE

We employed phrenic crushing in one case. This

patient's only symptom was repeated hemoptysis and exhibited the dilatation in the right lower lobe at the extreme base of the lung. We felt that here was a real indication for this operation and apparently it was justified for the patient has had no further hemoptysis. We believe that in general phrenicectomy in bronchiectasis is inadvisable because as a collapse measure it is inadequate, and should the result be unfavorable it cannot be recalled. If it is to be employed, repeated phrenic crushings should be done which will give a temporary elevation to the diaphragm before going on to produce a permanent type of collapse therapy.

## 4. BRONCHOSCOPIC LAVAGE

Bronchoscopic lavage was carried out in only two cases. These patients had bilateral disease and were unrelieved by general measures, postural drainage or treatment with lipiodol. These cases were selected because the outstanding feature was the difficulty experienced in attempting to expectorate and in whom the expectoration was of a tenacious character. The relief of all symptoms was very definitely noted but as before this was only temporary.

## 5. PNEUMOTHORAX

Six cases were given pneumothorax. Five were unilateral and had a considerable amount of expectoration; one case, in which bilateral disease was present, was of the dry type, pneumothorax being instituted because of repeated hemorrhages from the left side. We have been very well satisfied with the results obtained in all these cases—the outstanding feature being the marked reduction in the amount of expectoration in every case of the wet type, two of which became practically sputum free. In addition, hemorrhage was immediately stopped in the one case that was having repeated hemoptysis.

Besides reduction in the amount of expectoration general improvement was noted in every case except one, this one being the dry type. There was definite gain in weight and an improvement in the feeling of well-being on the part of the patients. In conjunction with pneumothorax postural drainage was still encouraged in all these patients, although it was difficult to enforce this in those who were unable to raise sputum in this manner.

It has been our experience that pneumothorax is effective in causing marked diminution of symptoms in all cases of unilateral bronchiectasis that have expectoration. This improvement has varied



directly with the degree of collapse and unfortunately every case had adhesions which interfered with a perfect collapse. Possibly in some of these cases pneumolysis should be performed but the patients exhibiting the type of adhesions where this procedure is indicated have been so well satisfied with their own improvement that they have hesitated to undergo the operation.

In no case has there been chills or temperature which would indicate that collapse therapy has interfered with drainage.

Case I: A female, age 40. Pneumothorax was instituted in this instance because of persistent hemoptysis, this case being the dry type of bronchiectasis. Although the disease was bilateral, physical signs indicated that the hemorrhage was coming from the left side. Pneumothorax was kept up on the left side for eight months and although successful in checking any further hemoptysis, the patient's general condition became worse. This was noted chiefly by loss of weight and pneumothorax was therefore discontinued. No further hemoptysis has occurred.

Case II: A female on whom pneumothorax has been kept up for three years. Treatment was begun at the age of 15. Before beginning treatment the amount of expectoration was from 10 to 12 oz. daily. During the first few months this was reduced to 1½ oz. and was maintained at this amount for about ten months. While spending a vacation at a girls' camp, this patient developed pneumonia and pneumothorax treatment was discontinued for several weeks. After the resumption of pneumothorax the collapse was limited chiefly to the lower lobe on account of adhesions at the upper part of the lung. It has been continued, however, because the amount of sputum is only about 3 oz. daily. Patient's general health is excellent.

Case III: A male, age 18, on whom pneumothorax was maintained 1½ years. Before beginning treatment expectoration was 6 to 7 oz. daily. After an adequate collapse had been accomplished, this patient became sputum free and remained so as long as pneumothorax was kept up. Unfortunately this boy's family moved out of town where it was impossible for him to continue with this type of treatment.

Case IV: A male, age 20, has been receiving pneumothorax treatment for five months. Sputum has been reduced from 9 to 3 oz. daily.

Case V: A male, age 17, under treatment three months. Sputum in this case was reduced from 6 oz. to 2 oz.

Case VI: This is a male, age 18, who has been under treatment five months. At the onset of treatment this patient was raising 6 to 8 oz. daily. He is now sputum free.

#### 6. LOBECTOMY

We have only one case in which lobectomy was performed. This was in a ten year old boy in which

the left lower lobe was removed. The bronchiectasis in this case was not confined entirely to this lobe although the disease was most extensive in this location. A two-stage lobectomy was done and has been followed by improvement in cough and expectoration, but these have not entirely disappeared and he is still being treated by postural drainage and other general measures. The lobectomy was done by Dr. Edward D. Churchill.

The subject of lobectomy in the treatment of bronchiectasis is a large one and cannot be dealt with in this paper. As you are aware it is one of the greatest advances that has been made as a cure for this disease. There is one point, however, that I would like to make. We hear not infrequently thoracic surgeons, when they come to a discussion of bronchiectasis, dismiss all forms of treatment except lobectomy as unsuccessful and conclude that excision of the diseased part is obviously the method of choice. When we consider by a generous estimate that in not more than forty per cent. of cases is surgery indicated and of this number not more than half will consent to undergo operative procedure, their remains about 80 per cent. who still have their bronchiectasis and require conservative treatment. For this reason we should not be in too great haste to throw all therapeutic measures except lobectomy into the discard.

#### Summary

1. Forty cases of bronchiectasis proven by lipiodol injection have been observed.
2. The left lung was more frequently involved than the right.
3. The symptoms in many cases were not characteristic and as a rule varied with the type and extent of the lesion.
4. Lipiodol injection of the bronchial tree is essential to prove the diagnosis.
5. Definite success has been achieved in diminution of expectoration and relief of other symptoms, but further study is necessary before making claims that any measures employed will result in permanent benefit.

#### REFERENCES

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  2. Fletcher, E.: *Bronchiectasis—study of 100 proved cases*, *J. Thoracic Surg.*, Vol. 4, p. 460.
  3. Graham, Singer & Ballon: p. 603.
  4. Oschner, Alton: *Bronchiectasis*, *Am. J. Med. Sci.*, Vol. 179, p. 388.
- NOTE I. Illustrative lantern slides accompanied this paper.
- NOTE II. I wish to acknowledge the assistance of Dr. U. E. Zambarano who was associated with me in the work done on these cases.

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## EDITORIALS

### MEDICO-ECONOMICS ADVANCES

Physicians are at last becoming sensitive to their own welfare. This is evinced by the recent formation of two medical groups independent of the organized medical societies. In January of this year a group of physicians in Pawtucket formed an organization known as the Caduceus Club whose expressed purpose is "to crystallize the opinion of medical men on problems affecting their welfare in

relationship to the community and to each other." More recently in East Providence there has been formed the East Providence Physicians' Association. These organizations have no conflict with the regular district societies, inasmuch as the membership is limited strictly to the physicians in the respective localities and their problems are economic rather than scientific.

The Committee on Public Health Clinics of this Society recommended, in its last annual report, the formation of just such clubs and pointed out the impossibility of the district society being able to cope with the ever changing picture of medical

practise in the community divisions of a given district. In other words, the medico-economic problems pertinent to Cranston, for example, are vastly different than in East Providence. However, both areas are served by the Providence Medical Society.

Medical men must organize and discuss the problems affecting their welfare and must determine an attitude and policy for their relations with each other and the community which they serve. Organization of the above mentioned clubs constitute an official local unit with whom health agencies and lay philanthropic groups may deal. It is hoped that similar clubs will be formed in Cranston, Warren, Bristol and many other communities where a physicians' association can operate as a unit with related health agencies and thereby foster better understanding and a more sympathetic and co-operative attitude among those interested in health problems.

CHARLES L. FARRELL, M.D.

#### COUNTY HEALTH UNITS

County Health Units are about to become a reality in Rhode Island. For a long time we have had a zero rating at Washington on matters pertaining to county health programs. Officials are hard at work to get it under way sometime in July of this year and already three physicians and their personnel are being trained in Public Health courses in Boston.

There will be three units for this state: one in Newport, one in Washington County and one in Woonsocket. These units will co-operate with physicians and practitioners will benefit. This will stimulate the profession to keep pace with the newest thoughts in public health work. The units will function strictly as public health units and they will not interfere in any way with private practice.

It does mean a scientific attempt for the control of communicable diseases, better records, surveys of health menaces and co-operation with the private practitioner to prevent the development and spread of communicable diseases.

#### M. D. TRAINED ABROAD

Apart from the matter of graduate study and research in foreign clinics, which may represent

anything from an honest effort to get information and inspiration from real leaders to a combination of junket and the acquisition of a camouflage of false prestige, we have in this country the further problem of dealing with the products of undergraduate training in foreign medical schools. It is a well-known fact that a large proportion of these students are Americans, usually of foreign parentage, who have matriculated abroad either because of inability to gain admission to medical schools in this country, or if admitted, because of inability to maintain their standing. The training in most European schools may be excellent for practice in the countries concerned but is certainly not the best preparation for practice here. The American Medical Association and the Boards of Medical Examiners of the various states are well aware of this situation. If the public is to be protected there must be no granting of licenses to inadequately trained practitioners. In our own state the rules adopted by the board cover this situation adequately and no amount of political pressure can be allowed to influence the decisions made honestly under these rules. The rules do not, by any means, present an insurmountable barrier to physicians educated abroad but they do make reasonably certain that persons of inferior ability and training will not be allowed by means of money spent abroad and pressure applied at home to become licensed physicians qualified under the law to be guardians of the health of citizens of Rhode Island.

#### PERORAL ENDOSCOPY AS AN AID IN THE DIAGNOSIS OF DISEASES OF THE BRONCHI AND ESOPHAGUS\*

By LINLEY C. HAPP, M.D.

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Peroral Endoscopy is a general term applied to the endoscopic examination of the larynx, laryngopharynx, trachea, bronchi, esophagus and stomach. In making these examinations, electrically lighted tubes serve as specula to push aside any obstruction and to bring into view the tissue to be examined. I am only familiar with the Jackson and Mosher type of instruments which are distally lighted. At the request of some of the men, I have brought along some of the instruments used in this type of

\*Read before the Rhode Island Medical Society, March 5th, 1936.

work so that the procedure may be better understood. (Demonstration of the Jackson laryngoscope, bronchoscopes, aspirating tips, laryngeal bronchoscopic and esophagoscopic forceps, the Jackson and Mosher types of esophagoscopes.

As you know, in making a bronchoscopic examination, we use local anesthesia and we examine directly the trachea and bronchial tree. Its use as a diagnostic aid is of value in all those cases that cannot be unraveled by the methods commonly employed in the diagnosis of chest diseases. On the medical service of every large hospital and in every sanatorium there are undiagnosed cases. In the latter, it is not only important to rule out tuberculosis but to establish a correct diagnosis. Many of these are bronchiectasis. Others are bronchial carcinoma. Unless these are recognized early, little can be accomplished by treatment. With the bronchoscope we can often make certain anatomical diagnosis with regard to the portion of the lung involved. Among these are bronchial obstruction and pulmonary suppuration.

Bronchial obstruction may be diagnosed clinically and by physical examination and should always be recognized by the aid of the fluoroscope and by films taken on full inspiration and expiration. If the obstruction is produced by an aspirated or endogenous foreign body, bronchoscopy is the only treatment worthy of consideration. If the obstruction is a growth, it is necessary to ascertain whether it is benign or malignant, by removing a piece. If benign, the growth may be entirely removed by the aid of the bronchoscope and forceps at one time or it may require numerous removals to wholly get rid of the obstruction. If it is malignant, the degree of malignancy can be ascertained by the tissue removed, and then referred for a pneumonectomy or X-ray treatment. If there is a stricture, this can be dilated with the bronchial dilator through the bronchoscope. If the obstruction is extra-bronchial, causing compression stenosis, bronchoscopy is indicated to ascertain the character of the process and to determine what plan of treatment is to be carried out. Failure to bring a case of bronchial obstruction to a final conclusion will not only deprive the patient of his only chance to recover, but will always lead to suppuration, distal to the obstruction.

Bronchial carcinoma, before the advent of bronchoscopy, was rarely recognized during life, but was found at autopsy. The performance of bronchoscopy in cases of bronchial obstruction, per-

sistent cough, unexplained wheeze or hemoptysis, has permitted a positive diagnosis in many cases. In some, the diagnosis was made sufficiently early so that pneumonectomy has been done. It must be emphasized that cough and wheeze are the two early symptoms of bronchogenic carcinoma. A cough which remains unexplained for a month should be further investigated. We are prone to associate asthma with a wheeze, which is a narrowing of a bronchus. And since carcinoma more commonly involves the larger bronchi, direct examination of these bronchi certainly seems like a logical procedure if there is a question of stenosis.

Now regarding tuberculosis, many men believe that bronchoscopy is absolutely contra-indicated. In the average case of tuberculosis, bronchoscopy is not necessary to make a diagnosis, but there are a large group of cases of suspected tuberculosis in which a positive diagnosis cannot be made. In these, bronchoscopy is very clearly indicated. Very often we get a history of hemoptysis with but little expectoration, only to find by bronchoscopy or pneumonography that the patient has bronchiectasis. Then again there are cases who do not raise any sputum and by aspiration of a bronchus, through a bronchoscope the diagnosis may be proved. It has also a very definite place in explaining certain signs and symptoms that have developed in a known case of tuberculosis.

Pulmonary abscess can be definitely localized by the bronchoscope. By such an examination one can determine the bronchus that is involved and it can be drained. Many times the surgeon can be enlightened as to its location, so that he can plan his operation to advantage. It must not be forgotten that a pulmonary abscess may develop secondary to a carcinoma or a foreign body. Also that bronchoscopy has a very definite place in the treatment of pulmonary abscess.

Concerning bronchiectasis, bronchoscopy is very definitely indicated in diagnosis and treatment. Many times patients are seen with a chronic cough and expectoration. By removing the secretion and then by injecting iodized oil, one can rule out or make a diagnosis. Sometimes bronchiectasis involves an upper lobe as well as a lower or middle lobe and so it is necessary to inspect the whole bronchial tree before the patient is turned over to the surgeon.

In discussing the esophagus, it might be said that its function is to convey to the stomach, by a series



of co-ordinated muscular movements, food, fluids, as well as large quantities of saliva more or less continuously, and that it lacks a definite nerve supply. It therefore follows that any pathological process that compresses the esophagus from without or that involves the esophageal wall itself, will encroach upon its lumen and will produce a variable degree of interference with the function of swallowing. It is also true that any disturbance of the esophageal innervation or the co-ordinated muscular movements will set up reflexes which interfere with the act of swallowing and pain, a symptom of great importance, is rarely complained of early.

The most common symptom of esophageal disease, and very often the only one, is dysphagia. Pain is a late manifestation.

A very careful history will elicit a possible etiological factor as:

1. Intentional or accidental swallowing of a caustic or corrosive.
2. Certain illnesses, as typhoid fever.
3. During pregnancy.
4. Some disappointment.

Physical examination with the aid of mirror laryngoscopy will often give a clue to the diagnosis. Patients with tuberculous, laryngitis, recurrent paralysis of the larynx, neoplasm involving the laryngo-pharynx and epiglottis, complain of difficult or painful swallowing. Dysphagia may also occur with aneurysm of the aorta or in mediastinal neoplasm. A Wasserman examination sometimes will aid. However the final aids are the X-ray to corroborate the physical findings in the chest and to study the function of the esophagus and esophagoscopy to inspect the interior of the esophagus.

The X-ray and fluoroscopic examination will contribute much to mediastinal disease which may give rise to esophageal symptoms as a result of compression or displacement. Esophageal function can be studied only by fluoroscopy with the aid of an opaque mixture. In this manner there can be detected the presence of any disturbance in esophageal function, any deviation of its course or abnormality of its lumen. These findings can be interpreted in terms of pathological changes and in many instances are correct. However, they cannot be accepted as conclusive and should be supplemented by esophagoscopy.

Esophagoscopy can be done under local or general anaesthesia with either the Jackson or the

(Continued on page 92)

## THE JOURNAL'S COLUMN

To insure prompt attention, the readers of this JOURNAL are advised: That matters pertaining to advertising, mailing and accounts should be addressed the Business Manager, Dr. C. W. Skelton, 106 Francis Street, Providence, R. I.

Other matters, books for review, notices, manuscript, letters, reports of meetings, and all affairs of literary nature should be addressed to the Editor, Dr. Frederick N. Brown, 309 Olney Street, Providence, R. I.

### AS TO BOOK REVIEWS

Books received for review are the property of the Rhode Island Medical Society.

Inasmuch as it is a compliment to be asked to review a scientific book, it is to be hoped in courtesy to the publishers that the review may be finished within a period of thirty days, the book sent to the Society's library and review to the Editor.

Should sixty days elapse before receipt of book (and review) the matter must be referred to the discretionary action of the Society in the recovery of its property.

"Letters to the Editor" are considered to be the personal expression of the writer's opinion upon the subject of which he writes.

The RHODE ISLAND MEDICAL JOURNAL disclaims any responsibility for these opinions and is not to be held accountable for any sentiment therein expressed or implied.

### BOOKS RECEIVED FOR REVIEW

**BEHAVIOR DEVELOPMENT IN INFANTS.** A Survey of the Literature on Prenatal and Postnatal Activities, 1920-1934. By Evelyn Dewey. Published for the Josiah Macy, Jr., Foundation by Columbia Press, 1935. 321 pages. Price \$3.50.

The author defines behavior as the neuromuscular and glandular reactions of living human organisms and though recognizing that social and emotional development might be included they are not discussed. The reason given for this limitation is that these subjects tend to lead into fields of theoretical speculation where there is as yet no satisfactory theory of the processes underlying strictly objective neuromuscular behavior patterns.

The theories of behavior development that are briefly dealt with are those of the Behaviorist and Gestalt Schools. The author notes that most of the physiologists and neurologists working on the correlation of structure and function at the present time tend, in their interpretations of results, to support the underlying principles of the Gestalt

concepts—that growth or learning as a process proceeds, in general, from the whole to the part.

The book is divided into five main divisions:

- Part I: Growth Processes.
- Part II: Behavior of the Human Fetus.
- Part III: Neonatal Behavior.
- Part IV: Behavior During Infancy.
- Part V: Summary and Conclusions.

The literature on animal behavior could not be included in the survey nor were the behavior patterns presented primarily by observations on what individuals or a group can do at successive age levels.

The careful limitation of the scope of the work to be undertaken together with the method of acknowledging briefly various contributions but avoiding numerous excerpts and quotations has decided merit. This is particularly true in view of the author's successful assimilation and interpretation of the mass of ideas and observations which have gathered around the development of certain types of behavior typical of the human infant. In a like manner gaps in the present knowledge are indicated. The basic material is presented with a minimum of theoretical speculation and discussion.

The organization of topics is in terms of specific types of behavior in an attempt to show the process of development of activities and to indicate where possible the correlations with growth in the structure of the nervous system and the organism as a whole.

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**PEDIATRIC NURSING**, by John Zahorsky, A.B., M.D., F.A.C.P., Professor of Pediatrics and Director of the Department of Pediatrics, St. Louis University School of Medicine; and Pediatrician-in-chief to the St. Mary's Group of Hospitals; Fellow of the American Academy of Pediatrics. Assisted by Beryl E. Hamilton, R.N., Graduate of St. Luke's Hospital, St. Louis. With 144 illustrations in the text and 7 color plates. St. Louis, The C. V. Mosby Company, 1936, Cloth, Price \$3.00.

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**AMERICA'S TOWN MEETING OF THE AIR; HEALTH SECURITY AND THE AMERICAN PUBLIC**, by Dr. Michael M. Davis and Dr. Morris Fishbein. Broadcast from The Town Hall, New York, over Station WJZ and Associated Stations; under the Auspices of The League for Political Education, Inc., and the National Broadcasting Company. Edited by Lyman Bryson, Professor of Education, Teachers' College, Columbia University. American Book Company, 88 Lexington Avenue, New York, N. Y., 1936. Pamphlet, Price 10 cents.

## PERORAL ENDOSCOPY AS AN AID IN THE DIAGNOSIS OF DISEASES OF THE BRONCHI AND ESOPHAGUS

(Continued from page 91)

Mosher type of instrument. Esophagoscopy gives information based on direct inspection of the interior of the esophageal lumen. A specimen of tissue can be taken, strictures can be dilated, diverticula can be explored, a foreign body can be removed.

In conclusion, I would say that every patient complaining of symptoms or sensation referable to the esophagus should be given the benefit of every diagnostic measure to determine the presence of actual disease. No esophageal case should be considered completed until after a roentgen-ray study and direct esophageal examination have been made.

Bronchoscopy can be an aid in the diagnosis of all obscure chest conditions after the ordinary methods, generally used, have been exhausted.

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## SOCIETIES

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### PROVIDENCE MEDICAL ASSOCIATION

The regular monthly meeting of the Providence Medical Association was called to order by the president, Dr. William S. Streker, on Monday evening, April 6, 1936, at 8:45 o'clock. The minutes of the last meeting were read and accepted. The secretary read a letter from the secretary of the Rhode Island Medical Society relative to a resolution adopted by the Committee on Medical Economics of the Rhode Island Medical Society "that all members of District Societies are automatically members of the State Society, and that the treasurer of each District Society shall remit to the State Society \$10.00 yearly for each member enrolled to the District Society." No action was taken on this matter.

The standing Committee having approved their applications, the following were elected to membership: Walter James Molony, William Lessel Leet.

The president announced the appointment of Dr. James H. Fagan as chairman of the Medical Subcommittee of the Red Cross Disaster Committee.

The first paper of the evening was read by Dr. Albert H. Miller and was entitled, "Diaphragmatic Respiration Recorded by a Synchronous Pneumograph." The speaker first demonstrated his machine for recording separately but synchronously thoracic

and diaphragmatic respiration. He then exhibited lantern slides showing records of normal respiration and response to stimuli of various sorts. He discussed the various stages of surgical anaesthesia and showed records of types of respiration encountered in surgical operations, especially during the third stage of anaesthesia when there is paralysis of thoracic respiration. He stated that in many surgical operations the diaphragm is doing 10 or 15 times its normal work. The paper was discussed by Drs. M. Saklad, Hayward and Kingman.

The second paper was read by Dr. Roger I. Lee of Boston, Mass., who spoke on "Coronary Thrombosis." He pointed out that the causation is unknown or poorly known. Coronary thrombosis does not usually come out of a clear sky, but occurs in those patients with a history of true or false angina. The E. K. G. taken very early is almost inevitably normal; later it shows characteristic changes. The pain is usually though not necessarily in the chest; it may be in the neck, hand, arm, even in the right hand, in the belly, or there may be no pain at all. There may be all variations in severity from mild to severe, but patients who seem not very sick may die. Prognosis is very difficult. There is no treatment except absolute rest. Digitalis is indicated in congestive failure. Morphine is of great importance. Patients should have bed rest for one month, and take one month getting up and about. The speaker is still convinced of the wisdom of no exercise in the after care. He believes there is no advantage in the complete elimination of coffee, alcohol, and tobacco. The usual sequel is some day congestive failure or sudden death. The paper was discussed by Drs. C. B. Leech, F. B. Cutts and Morein.

The meeting adjourned at 10:50 P. M. Collation was served. Attendance 118.

Respectfully submitted,

HERMAN A. LAWSON,  
*Secretary*

#### KENT COUNTY MEDICAL SOCIETY

The regular meeting of the Society was held April 9th, at the Elmcroft, Hillsgrove, Dr. Rocco Abbate presiding.

The matter of membership to the State Society was discussed thoroughly. The general consensus of opinion was in favor of the principle of the movement, which was to automatically take into the State Society any new local member. It was

felt, however, that the increased dues would be a definite hardship to a man just starting practice and might be the means of keeping some from enjoying the local society. The matter was therefore tabled indefinitely.

A change in the time of the meeting was discussed and the members are to be sounded out as to their opinion.

The routine business was conducted and the speaker of the evening, Dr. Anthony Corvese, read a very enlightening paper on "Peptic Ulcers, a Ten Year Résumé of All Cases that Came to Operation for Perforation at the Rhode Island Hospital."

G. L. YOUNG, M.D.,  
*Secretary.*

#### JOURNALS SUBSCRIBED FOR BY THE PROVIDENCE MEDICAL ASSOCIATION DURING 1935

American Journal of Diseases of Children; American Journal of Obstetrics and Gynecology; American Journal of Roentgenology; American Journal of Surgery; American Journal of Syphilis; American Review of Tuberculosis; Annals of Surgery; Archives of Dermatology and Syphilology; Archives of Neurology and Psychiatry; Archives of Ophthalmology; Archives of Otolaryngology; Archives of Pediatrics; Archives of Surgery; Brain; British Medical Journal; Bulletin Institute History of Medicine (Johns Hopkins); Bulletin Johns Hopkins Hospital; Hygeia; Journal of Bone and Joint Surgery; Journal of Experimental Medicine; Journal of Infectious Diseases; Journal of Nervous and Mental Disease; Journal of Pediatrics; Journal of Thoracic Surgery; Lancet; Medical Journal and Record; Military Surgeon; Modern Hospital; Quarterly Cumulative Index; Surgery, Gynecology and Obstetrics; Surgical Clinics of North America.

G. S. MATHEWS, M.D.

#### REPORT OF PROVIDENCE MEDICAL ASSOCIATION COMMITTEE FOR HARD-OF-HEARING SCHOOL CHILDREN

Your committee has had several meetings. Its members have consulted with Dr. Charles B. Lewis, Director of Health in the Providence Public Schools; Dr. Frank J. McCabe, School Otologist;

Dr. Michael J. Nestor, Providence Superintendent of Health; Father Cassidy of the Parochial Schools, and others.

The paper of Dr. Gordon Berry, as read before us in October and published in the December issue of the RHODE ISLAND MEDICAL JOURNAL, has been a source of information and inspiration.

The following is a brief summary of what we believe constitutes an adequate handling of the problem of the hard-of-hearing children in the Providence schools.

Children in the first three grades should have their hearing tested by spoken voice or whisper. This can be done by the teachers. Pupils showing a defect should be referred to the school otologist.

Pupils from the fourth grade up, at least to the ninth grade, should have bi-annual or annual test of hearing with the 4A phonograph audiometer. The testing should be done by individuals, teachers or school nurses having special training in the use of this instrument.

Children showing a loss of nine or more sensation units in either ear should be re-tested in smaller groups. Those still found defective should be re-tested again. Pupils found subnormal on the final test should be referred to the school otologist.

Permission should be obtained from pupils' parents for the otologist to wipe out ears and remove wax if needed to render satisfactory examination possible.

The otologist should take a history of aural and related troubles, and make and record an adequate examination of the ears, nose, and throat. Further tests of hearing should be made by voice, watch, acoumeter, tuning forks, etc., as necessary in the individual case.

Any child who requires treatment should be referred to a doctor of the family's choice. A copy of the school otologist's examination should be sent with such refers for treatment, at least in the case of those children who will go to a clinic rather than to a private physician.

In addition to searching out the hard-of-hearing pupils and urging their parents to provide indicated treatment the schools should provide special seating in class-rooms and the teaching of lip-reading, in order that these pupils may develop in as nearly a normal manner as possible and progress properly in their studies. For those with almost total loss of hearing we are fortunate in having the Rhode Island School for the Deaf.

We have been glad to learn that the Providence

Public Schools have in operation a well-organized plan for handling the situation as far as available funds have permitted. Previous appropriations have permitted employing an otologist for only a very limited time. Dr. Lewis informed me just recently that arrangements have been made for hiring the otologist's services for a greater number of hours.

We believe, as has been recommended by the school physician several times previously, that lip-reading should be taught in the schools to the considerable number of children needing this help; and we urge that a teacher of this art be employed as soon as possible.

Dr. McCabe and Dr. Lewis have kindly accepted our suggestion that a copy of the otologist's examination be sent when a pupil is referred for treatment.

If an otologist is employed for a really sufficient number of hours, and if lip-reading is taught, the Providence public schools will be providing an adequate service which may well serve as a pattern for other communities.

Our suggestions have been kindly received by those in charge of the health work in the Parochial Schools of the city, and we have urged that the work being done there be enlarged along the lines outlined above.

We have written the secretary of the Rhode Island Medical Society, suggesting that the State Society interest itself in looking into the care of hard-of-hearing children in other schools throughout the State.

Respectfully submitted,

WILLIAM P. BUFFUM

N. A. BOLOTOW

GORDON J. MCCURDY

FRANK W. DIMMITT, *Chairman*

*Mr. President and Members of the Providence Medical Association.*

The Committee on Care of the Low-Income Group reports its activities thus far:

Two meetings have been held.

The Committee decided that its first step should be to determine, so far as possible, how much "real need" existed in Providence for the medical profession to establish an organized plan to care for the low income group. In other words, whether or no this group, or a large percentage of it, may not already be well cared for and able to meet the cost of such care. The Committee finds much statistical



evidence in answer to this question, from various parts of the country. However, it feels such evidence may not apply to our local conditions and so plans to survey in Providence.

The Committee is informed that the cost of such survey will probably be borne by the Federal Government, through W.P.A. funds. An outline of the Project, as required by W.P.A., is now in Washington, sent and sponsored by Dr. Michael J. Nestor, on behalf of the City Health Department. Government approval of the Project is hoped for and expected, though not assured. Dr. Nestor further offers part-time service of his Assistant, Dr. Elihu Saklad, as Director of the survey. A fairly definite plan, with questionnaire, has been outlined by the Committee. If, and as soon as approval of the survey is received from Washington, the work will begin. The time of its completion is necessarily indefinite, probably several months hence. Meanwhile the Committee proposes to keep the Society informed of progress, since it desires complete co-operation, suggestions and advice from all members. The Committee urges free, open as well as personal discussion on this subject.

Signed for the Committee,

*HALSEY DEWOLF, Chairman*

### ANNOUNCEMENT

Dr. M. A. Chapien announces the removal of his office to 173 Waterman Street, Providence, Rhode Island. Practice limited to Urology.

### OBITUARY

#### DR. HORACE NEWELL WILLIAMS

Dr. Horace Newell Williams, one of the oldest physicians in the State, died of a cerebral hemorrhage on November 20, 1935, at his home, 198 Broadway, Providence.

Dr. Williams was born at Uxbridge, Mass., on January 2d, 1861, the son of Nicholas B. and Charlotte E. (Newell) Williams. He received his education in the schools of his native town, and after leaving high school entered the Bellevue Hospital Medical College of New York, now a part of New York University. He was graduated from that institution in 1882 with the degree of Doctor of Medicine. The next eighteen months were spent in the Surgical Department of Bellevue Hospital from which he graduated in 1884, from which time he was in active practice in Providence, a period of fifty-one years.

On April 30, 1890, Dr. Williams married Carrie L. Peirce, daughter of Thomas F. and Caroline Rounds Peirce. He is survived by a daughter, Mrs. George R. Cobb, and a son, Francis P. Williams.

Dr. Williams was a member of the Rhode Island and Providence Medical Society, the Society of Alumni of Bellevue Hospital. He was a 32nd degree Mason, belonging to St. Johns Commandery. He also belonged to Palestine Shrine and Scottish Rite. He was a Major in the First Light Infantry Veterans and was always active in that organization.

ALBERT E. HAYES

HARVEY E. WELLMAN

#### DR. FRANKLIN PIERCE CAPRON

Dr. Franklin Pierce Capron was born in Cumberland, R. I., November 2d, 1852, and died at his home in Providence, December 16th, 1935, after a short illness in his 84th year.

He prepared for college at the old Mowry & Goff School and entered Brown in the Class of 1877. He became a member of Alpha Delta Phi and always maintained a lively interest in that fraternity.

After graduating from Brown, Dr. Capron was graduated by the College of Physicians and Surgeons in New York in 1879.

His first year after graduating from Medical School was spent in general practice. He came to Providence to take up eye, ear, nose and throat as a specialty.

In 1880 he married Hannah Maria Comstock who died in 1925. There was one child by this marriage, the present Mrs. Helen Capron Strickler.

He was appointed Assistant Surgeon to the Eye and Ear Department of the Rhode Island Hospital December 1st, 1880.

On May 6th, 1891, he became Surgeon to the Nose and Throat Service and on the same date Assistant Surgeon to the Eye Service. Dr. Capron retired from the Active Hospital Staff December 7th, 1898, and was appointed Consultant. During the 18 years of his service he gave abundantly of his time and skill.

Dr. Capron was blest with abundant health and enjoyed an active life.

Dr. Capron was a member of the American Academy of Ophthalmology and Otolaryngology, the American Otological Society, and the New England Ophthalmological Association.

HERMAN C. PITTS

EDGAR B. SMITH

## COMMENTS UPON MEDICAL TOPICS

By MALFORD W. THEWLIS, M.D.

*Dangers of Arsenicals.* U. S. Naval Bulletin, 1:59, 1935, discussing arsenical dermatitis observes that more than half the cases had slight disturbances following the injections which preceded the one causing the more serious type of dermatitis. Blood counts are advised on every individual who experiences any type of reaction—to all patients who do poorly under treatment. In the thrombocytopenic type—hemorrhages into the skin and mucous membranes, the blood platelets are diminished. Recovery is the rule. In the granulocytopenic type, there is fever, soreness of the gums and sore throat. As it progresses it looks like septic sore throat. The white count may be less than 1,000. Prognosis is grave. If recovery takes place it is slow. In aplastic anemia the onset is delayed, sometimes as long as a month. The symptoms are a combination of both types just mentioned. The blood shows a diminution of all blood elements. Prevention requires constant observation of every patient who is taking any arsenical. The drug must be prepared and administered in accordance with well established rules. The water should be freshly distilled and sterilized and the drug sifted on the surface of the water and allowed to dissolve without any agitation. The concentration should not exceed 0.1 gram to 5 c.c. of water and the rate of injection should not exceed 0.1 grams in 30 seconds. (Severe reactions, in fact of an alarming nature, may follow the use of arsenicals which have decomposed by being in a hot place. Solutions should be prepared with double distilled water. The ampoule should be submerged in alcohol before using; if there is a crack in the ampoule there is moisture in the powder. There should be no darkening of the product. In some instances where reactions have followed it has been found that the product was several years old and it had been kept in a warm place. The solution should be injected slowly and adrenalin solution should be at hand in case of emergency.—M. W. T.)

\* \* \*

There are many aged patients whose lives would be much more tolerable if they had spectacles and properly fitted lenses. Many cannot get out of their homes to be examined. Others couldn't afford it if they could get out.

\* \* \*

*Aneurysm of the Abdominal Aorta.* Gordon, New Orleans Med. & Surg. Jour., 87:466, Jan., 1935, reports a case of aneurysm of the abdominal aorta simulating a kidney.

A slight fever and leucocytosis help in the diagnosis of coronary thrombosis. The electrocardiogram often does not show typical evidence of the disease for two or three days after the attack.

\* \* \*

Coronary thrombosis without pain has been noted by several authors. At times there is only weakness and dyspnea.

\* \* \*

One cause of coronary thrombosis, often neglected, is sexual intercourse. Many persons after the age of 60 suffer from an attack due to this cause. The old man who marries a younger woman is known to have a good chance to develop coronary occlusion rather soon after his marriage.

\* \* \*

*Deforming Scars.* Jerome P. Webster, The Penn. Med. Jour., 38:929, Sept. 1935, has an article which is worth reading in its entirety. He states that every wound, whether acquired by disease or by accidental or operative trauma, is a potential deformity. This article considers the prevention of these deformities. (Since deforming scars about the face sooner or later reach the plastic surgeon, why not let him suture the wound in the beginning, whenever possible?—M. W. T.)

\* \* \*

Not a bad idea for physicians to follow the work of the Consumers' Research, Washington, New Jersey. Many patients follow this very carefully.

\* \* \*

Rhode Island is in need of organized prenatal clinics.

\* \* \*

*Sacrocoxalgia.* Allegretti, Ill. Med. Jour., 67:37, Jan., 1935, states that epidural injection of saline completely relieved the pain of sacrocoxalgia in 92% of patients. The injection is harmless.

\* \* \*

*Skin Cancer.* A. H. Wolfgang Magnusson of Radium-Hemmet, Stockholm (Acta Radiologica, 1935) states "that extension into the deep tissues is the most important of the factors which affect the curability of skin cancer by treatment with radium. With infiltrating tumors the prognosis seems to grow worse as the size increases, while with superficial tumors the area is not of the same significance. Other factors are of minor importance in comparison with the extent and size of the tumors."

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JOHN E. DONLEY, M.D.

President of the  
Rhode Island Medical Society